

(12) **UK Patent Application** (19) **GB** (11) **2 198 709 A** (13)  
 (43) Application published 22 Jun 1988

(21) Application No 8629244

(22) Date of filing 6 Dec 1986

(71) Applicant  
**Bonar Cooke Cartons Limited**  
 (Incorporated in United Kingdom)  
 Elsinore Road, Old Trafford, Manchester, M16 0NP

(72) Inventor  
**Edward Gordon May**

(74) Agent and/or Address for Service  
**Urquhart-Dykes & Lord**  
 5th Floor, Tower House, Merriion Way, Leeds  
 West Yorkshire, LS2 8PA

(51) INT CL<sup>4</sup>  
**B65D 75/04 5/42**

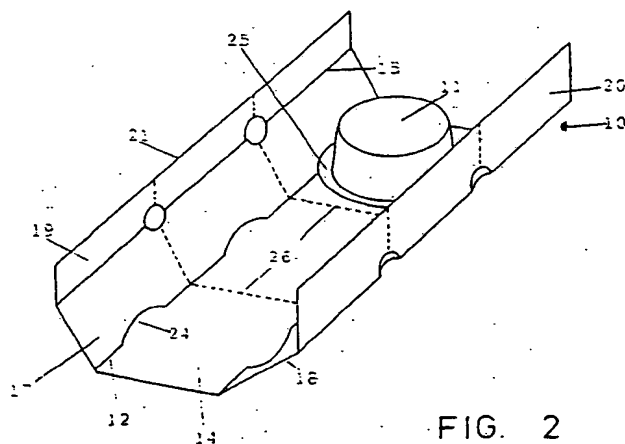
(52) Domestic classification (Edition J):  
**B8P E2A**  
**U1S 1809 B8P**

(56) Documents cited  
**GB 1221320** **GB 1139141** **GB 0905467**  
**GB 0839146**

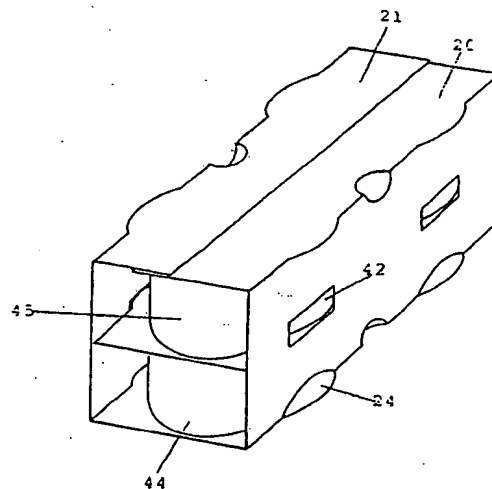
(58) Field of search  
**B8P**  
**Selected US specifications from IPC sub-class**  
**B65D**

(54) **Carton-forming blank**

(57) A carton-forming blank 10 comprises fold lines defining a base 14, side panels 17, 18 and edge flaps 20, 21. The flaps 20 and 21 are inwardly foldable into overlapping relation upon erection of the side panels 17 and 18 so as to complete the formation of the carton sleeve. Pairs of opposed slits are formed along the fold lines 12 and 13, bounding the base 14, each slit forming a locating recess 24 upon erection of the corresponding side panel whereby each pair of locating recesses is able to hold captive a respective flanged container 11 to be loaded in the carton. Alternatively, two layers of containers 45 may be accommodated, separated by a divider plate. Further, lines of weakening 26 may allow the carton to be subdivided.



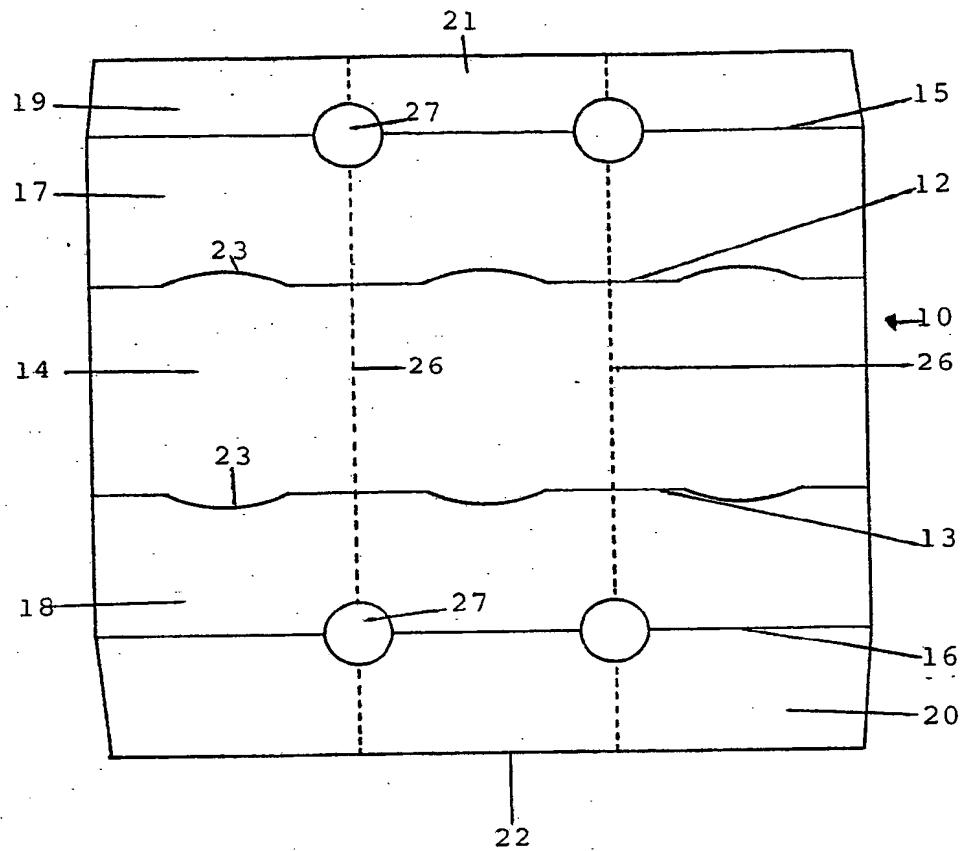
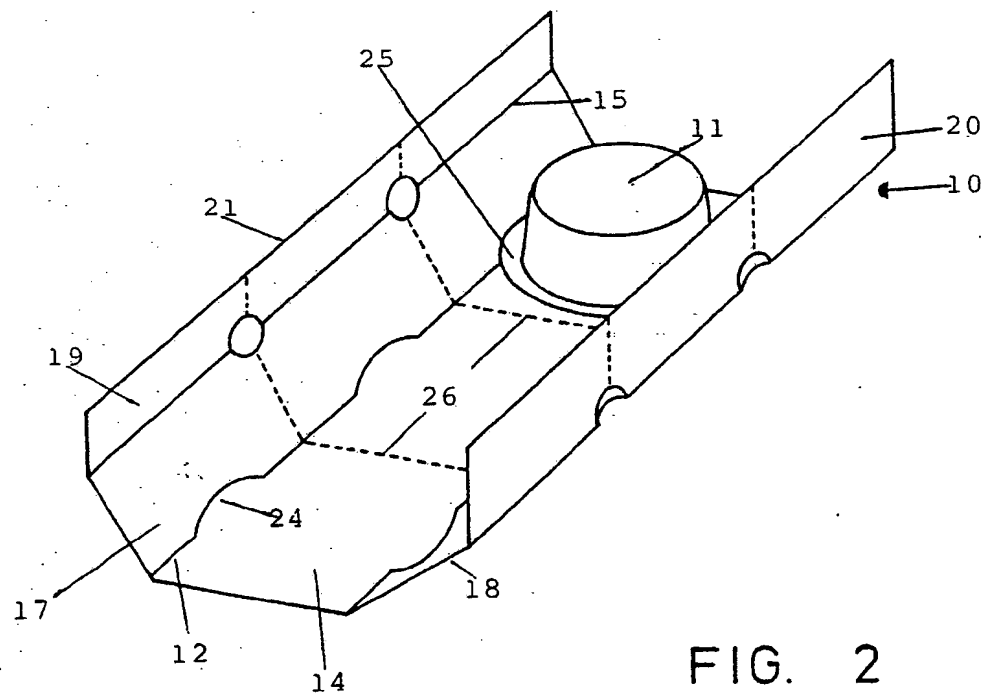
**FIG. 2**

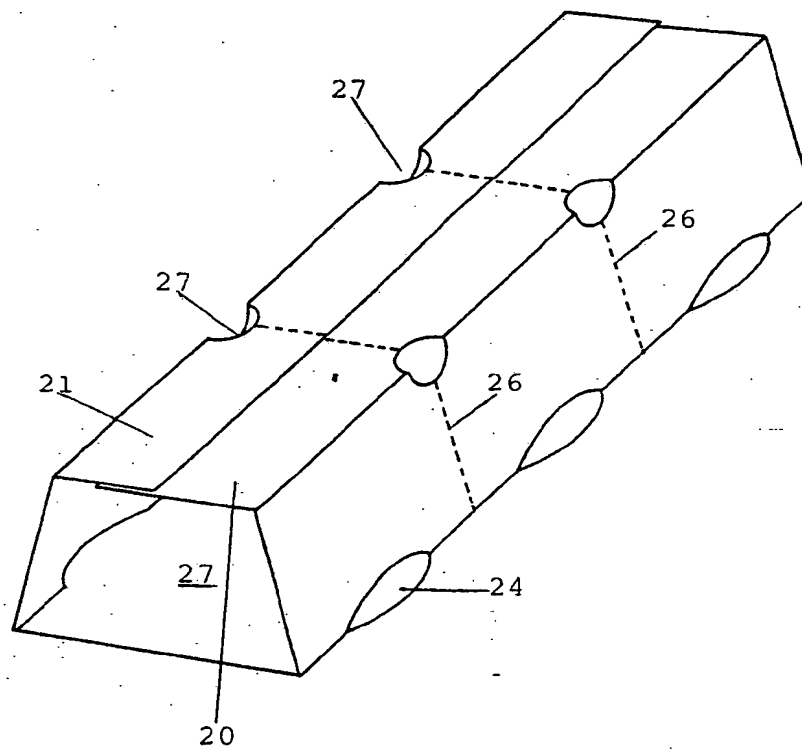


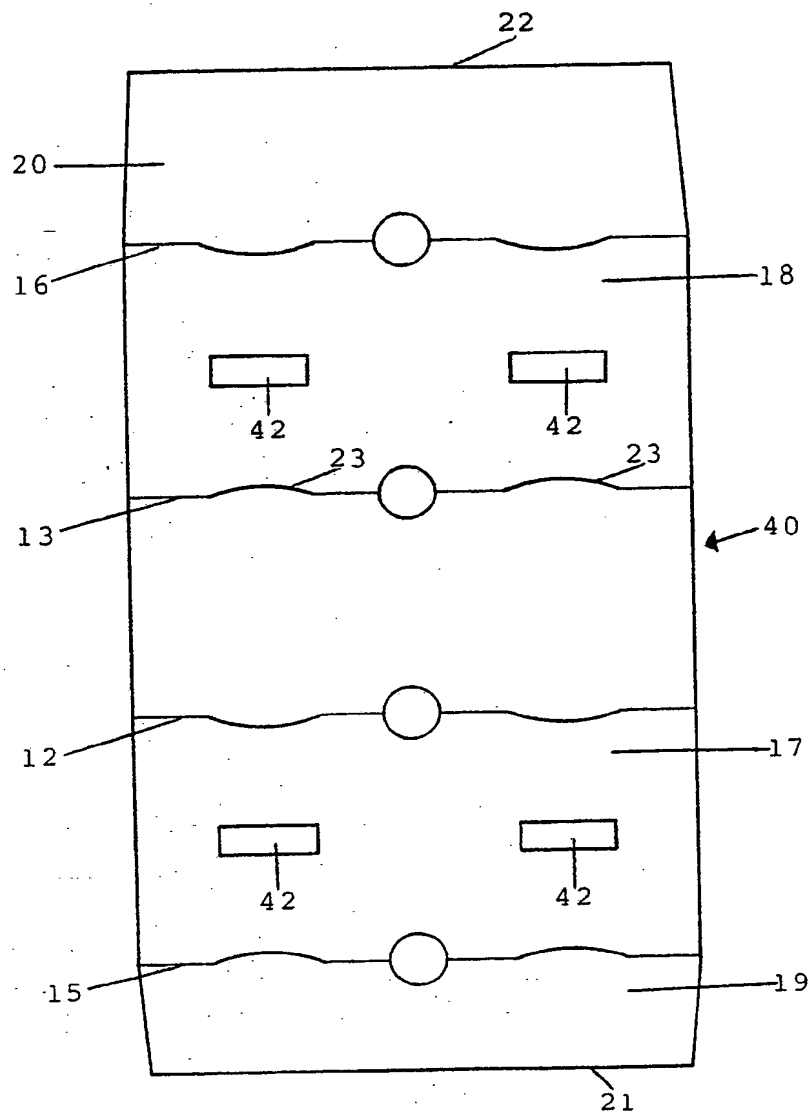
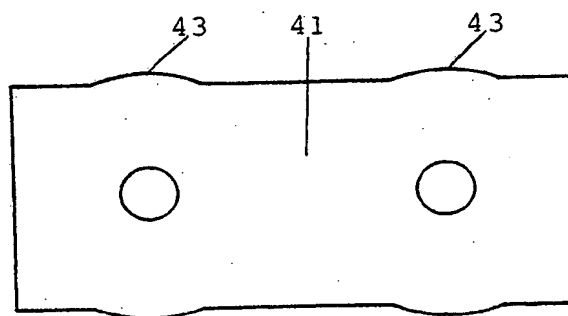
**FIG. 3**

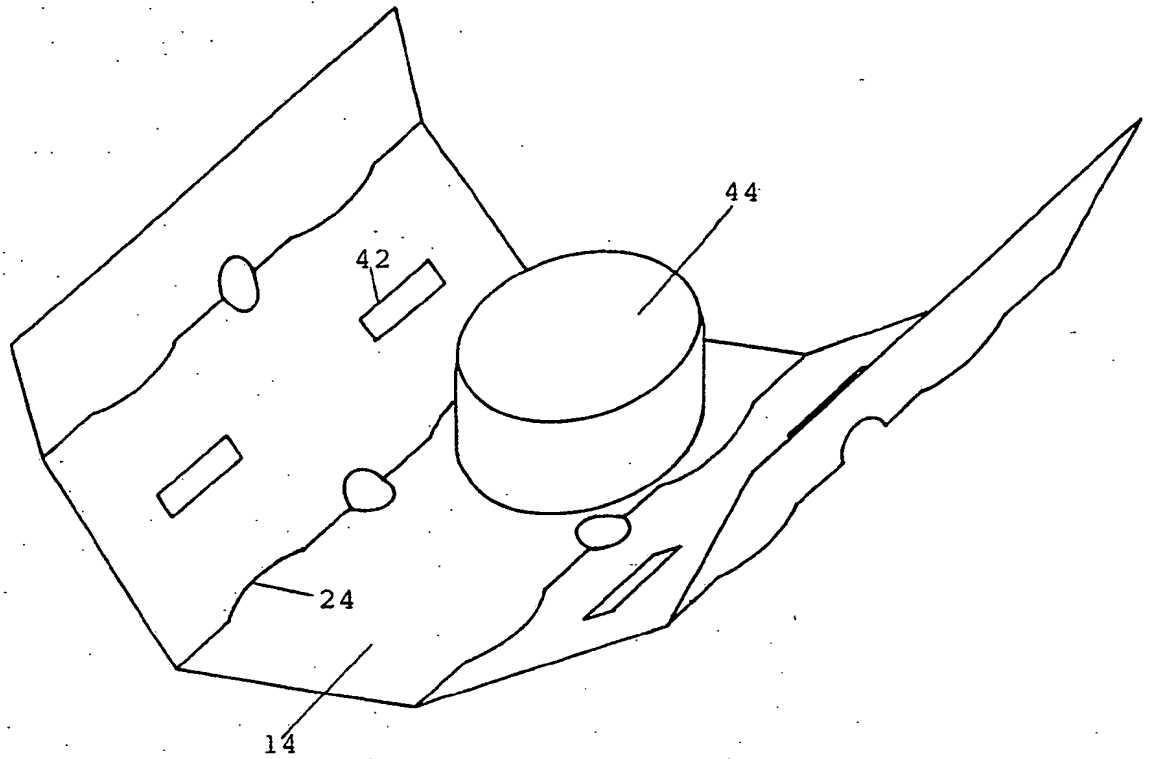
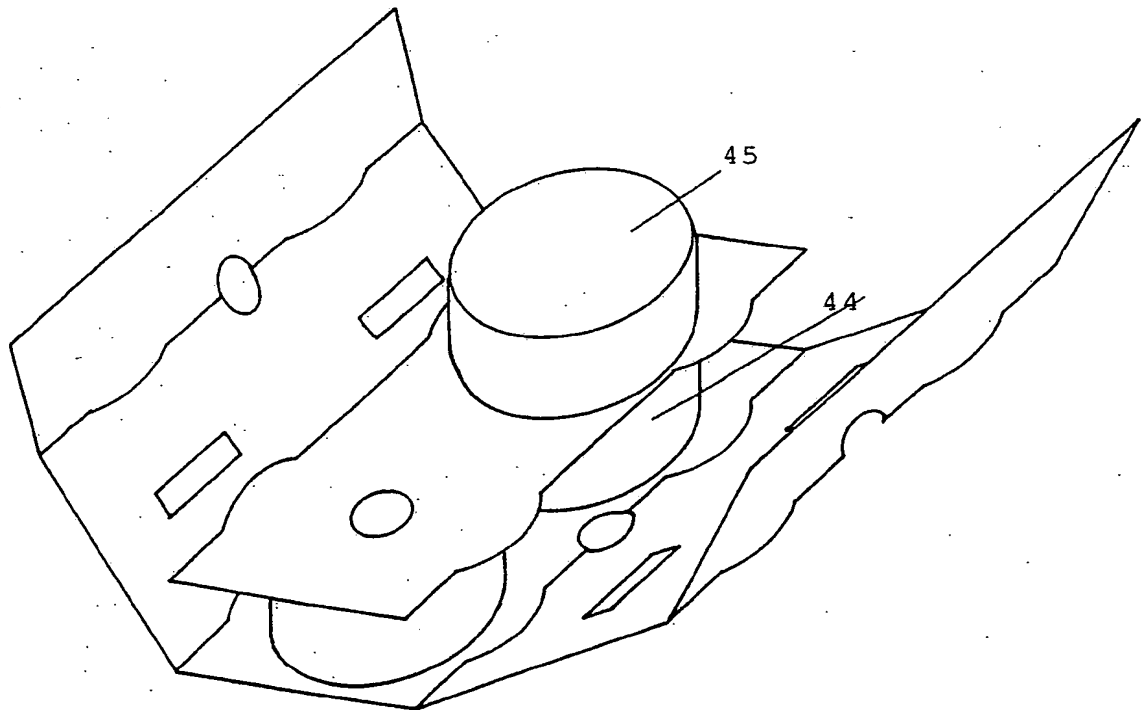
The drawing(s) originally filed was (were) informal and the print here reproduced is taken from a later filed formal copy.  
 The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

1/5

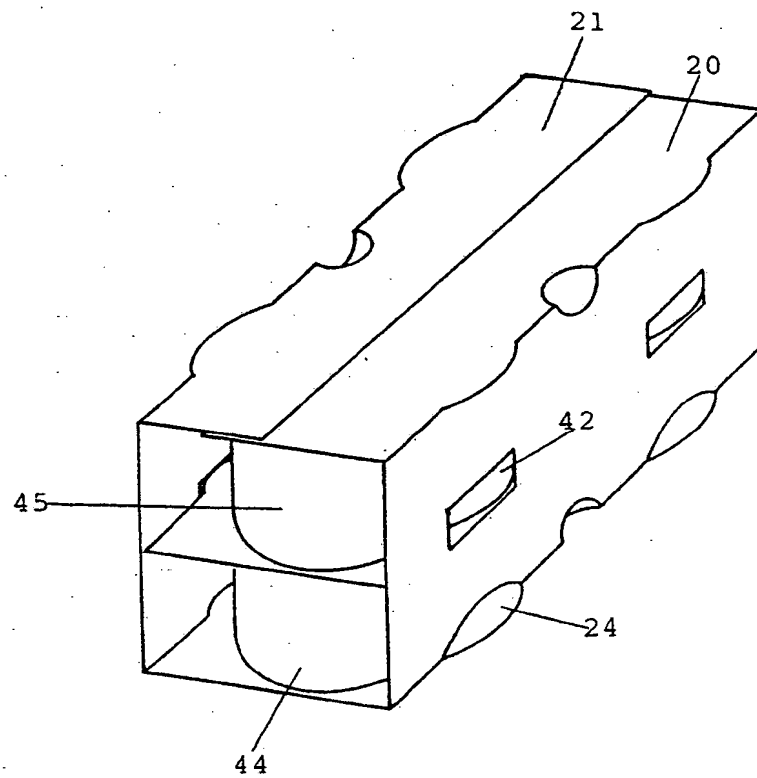
FIG. 1FIG. 2

FIG. 3

FIG. 4FIG. 5

FIG. 6FIG. 7

5/5

FIG. 8

## CARTON-FORMING BLANK

This invention relates to a carton-forming blank which is capable of being erected, loaded with product, and then closed around the product so as to form a product-containing carton sleeve.

Carton sleeves are well-known for use in the packing industry, and form a convenient means by which product can be readily loaded and then closed therein using automated packaging equipment.

Carton sleeves are used to store products singly, such as single cans, or foil wrapped containers, but they can also be used to store a row of products, such as a set of three tins of cat food. The use of carton sleeves enables products to be readily transported in bulk handling, but supermarkets often like to be able to display the product to their customers without having to break-open the cartons. The customers also like to be able to purchase and to transport home certain products in bulk, and it is therefore necessary for the carton sleeves to be able to hold the product reliably, and yet also to display the product to the customer.

This is usually achieved with carton sleeves by leaving the ends of the sleeve open, or substantially so, whereby the contents of the carton can be seen. However, necessarily, this reduces the ability of the carton to restrain the content thereof from becoming dislodged from its intended position, or from being at least partly emptied from the carton during handling of the carton. Clearly, the greater the size of the product, and/or increase in the number of products carried, the greater will be the problem of securely locating the product in position. In this respect, it should be borne in mind that there are standard tests for sleeve cartons, including dropping the loaded carton from a standard height onto a

hard surface.

Furthermore, in the packaging of more than one product container in existing designs of sleeve cartons, it is necessary to break-open the sleeve in order to remove each container, and when only one container is to be removed, the remaining containers are not always satisfactorily retained in position by reason of the damage caused to the sleeve carton to effect removal of a selected container.

It is therefore an objective, in a first aspect of the invention, to provide a carton sleeve which can hold more than one product container, and yet which can be broken-open to remove a selected container in such a way that the remaining container(s) is safely retained in position in the residual part of the carton, which may then be returned to storage e.g. to a deep freeze.

It is a further objective, in a second aspect of the invention, to provide a carton sleeve which, then loaded with product, is at least partly open at one end for viewing of the product, but which securely retains the product from movement along the length of the sleeve.

According to the first aspect of the invention there is provided a carton-forming blank which is capable of being erected to permit product to be loaded therein, and then closed around the product so as to form a product-containing carton sleeve which is at least partly open at at least one of its ends to permit viewing of the product in the sleeve, in which the blank comprises:

first and second parallel fold lines which define therebetween a panel which forms a base of the sleeve upon erection of the blank, the base serving to bear the load of product loaded thereon;

third and fourth fold lines which extend parallel to each other and to the first and second fold lines, the third fold line being laterally spaced from the first fold line to define therebetween a first side panel and the



fourth fold line being laterally spaced from the second fold line to define therebetween a second side panel;

first and second edge flaps defined between the third and fourth fold lines and adjacent side edges of the blank, 5 said flaps being inwardly foldable into overlapping relation, upon erection of the first and second side panels, so as to complete the formation of the carton sleeve; and

pairs of opposed slits formed in the blank along the 10 lengths of the first and second fold lines, each slit forming a locating recess upon erection of the corresponding side panel whereby each pair of opposed locating recesses is able to hold captive a respective flanged container to be located in the carton.

15 The number of pairs of opposed slits will depend upon the number of flanged containers e.g. tins which are to be loaded in the carton. Upon completion of the carton sleeve formation, the product e.g. three tin cans is firmly held within the sleeve formation of the carton, but the product 20 is also restrained from movement along the length of the carton by the locating recesses.

For certain types of product e.g. tins of cat food, it may be desirable to be able to load a carton sleeve with two layers of product containers, in which case a divider 25 plate may be provided which helps to maintain rigidity of the carton, as well as serving as a base on which the upper layer of containers is placed. To provide longitudinal restraint for the upper layer of containers, cut-outs may be formed in the first and second side panels, which form 30 locating recesses into which parts of the upper layer of containers e.g. rim portions may extend.

According to the second aspect of the invention there is provided a carton-forming blank which is capable of being erected to permit product to be loaded therein, and 35 then closed around the product so as to form a product-

containing carton sleeve which is at least partly open at one end to permit viewing of the product in the sleeve, in which the blank comprises:

first and second parallel fold lines which define  
5 therebetween a panel which forms a base of the sleeve upon erection of the blank, the base serving to bear the load of product loaded thereon;

third and fourth fold lines which extend parallel to each other and to the first and second fold lines, the  
10 third fold line being laterally spaced from the first fold line to define therebetween a first side panel and the fourth fold line being laterally spaced from the second fold line to define therebetween a second side panel;

first and second edge flaps defined between the third  
15 and fourth fold lines and adjacent side edges of the blank, said flaps being inwardly foldable into overlapping relation, upon erection of the first and second side panels, so as to complete the formation of the carton sleeve;

20 transverse lines of weakening extending across the blank between the side edges, said lines being spaced apart from each other along the length of the blank so as to define, upon erection of the blank, a respective pocket for receiving a single product container therein; and

25 pairs of opposed cut-outs formed in the blank at positions which are spaced apart along the length of the third and fourth fold lines and which are located such that each pair of cut-outs is intersected by a respective one of the weakening lines, the arrangement being such that a  
30 carton sleeve loaded with a plurality of product containers, each housed in a respective pocket, can be broken-open along a selected one of the lines of weakening and in a generally pivotal motion about an axis extending through the respective pair of cut-outs, thereby to make  
35 one individual product container available, but leaving the

remaining portion of the carton and the remaining product container(s) securely housed in its pocket for storage ready for future use.

Accordingly, the carton which can be erected from a blank according to the second aspect of the invention may be used to store a plurality of separate product containers e.g. a range of products, and which may be stored away e.g. in a deep freeze, and when one particular type of container is required, it is readily obtained by "breaking-open" the carton sleeve, but the remainder of the carton remains intact for re-storage. This is a considerable advantage to users, to whom it is a common experience with existing packaging (holding a plurality of containers) that the packaging has to be damaged to a considerable extent to effect removal of a single container that the remaining containers are no longer securely held in position.

Preferably, in a blank according to the second aspect of the invention, pairs of opposed slits are formed in the blank along the lengths of the first and second fold lines, each slit forming a locating recess upon erection of the corresponding side panel whereby each pair of locating recesses is able to hold captive a respective flanged container to be loaded in the carton.

In order to provide further longitudinal restraint for products loaded in a carton formed from a blank according to the first or second aspect of the invention, and preferred developments thereof, it may be desirable to pre-fold or pre-weaken selected regions of the side panels of the blank so that, upon completion of the formation of the carton sleeve with product therein, these regions can be pinched-in, thereby forming "tucks" which restrain the product from movement towards the otherwise open ends of the sleeve.

Preferred embodiments of carton-forming blanks according to the invention will now be described in detail,

by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a first embodiment of carton-forming blank according to the invention;

5        Figure 2 is a perspective view of the blank of Figure 1, in a partly erected state;

Figure 3 is a perspective view of the complete formation of a product-containing carton sleeve derived from the blank of Figures 1 and 2;

10       Figure 4 is a plan view of a second embodiment of carton-forming blank according to the invention, for use in forming a product-containing carton sleeve;

Figure 5 is a plan view of a divider plate for use with the blank of Figure 4;

15       Figure 6 is a perspective view of the blank of Figure 4 during erection of the carton sleeve, but with a single product container of a lower layer loaded thereon;

Figure 7 is a perspective view, similar to Figure 6, but showing a second layer of product container loaded  
20 therein; and,

Figure 8 is a perspective view of the blank of figure 4, after formation into a product-containing carton sleeve with two layers of product containers loaded therein.

Referring now to Figure 1 to 3 of the drawings, the  
25 first embodiment of carton-forming blank is designated generally by reference 10, and is capable of being erected to permit products to be loaded thereon, and then closed around the product so as to form a product-containing carton sleeve which is at least partly open at one or both  
30 of its ends to permit viewing of the product in the sleeve. In Figure 2, a single product container is illustrated, which takes the form of a flanged foil-wrapped container 11.

The blank 10 comprises first and second parallel fold  
35 lines 12 and 13 which define therebetween a panel 14 which

forms a base of the sleeve upon erection of the blank 10, the base 14 serving to bear the load of product loaded thereon, as shown in Figure 2, during carton erection, the carton subsequently being inverted when fully formed. Third 5 and fourth fold lines 15 and 16 extend parallel to each other and to the first and second fold lines 12 and 13, the third fold line 15 being laterally spaced from the first fold line 12 to define therebetween a first side panel 17 and the fourth fold line 16 being laterally spaced from the 10 second fold line 13 to define therebetween a second side panel 18.

First and second edge flaps 19 and 20 are defined respectively between the third fold line 15 and the adjacent side edge 21 of the blank 10, and between the 15 fourth fold line 16 and the adjacent side edge 22 of the blank 10. The flaps 20 and 21 are inwardly foldable into overlapping relation, as shown in Figure 3, upon erection of the first and second side panels 17 and 18 so as to complete the formation of the carton sleeve.

20 Pairs of opposed slits 23 are formed along the lengths of the first and second fold lines 12 and 13, each slit forming a locating recess 24 (see Figures 2 and 3) upon erection of the corresponding side panel whereby each pair of locating recesses is able to hold captive a respective 25 flanged container to be loaded in the carton. Thus, the flange 25 of container 11 can extend partly into the opposed pair of locating recesses 24 of the pocket region defined by the carton sleeve for the container 11. The number of pairs of opposed slits 23 will depend upon the 30 number of flanged containers which are to be loaded in the carton. Upon completion of the carton sleeve formation, the product e.g. three tin cans, is firmly held within the sleeve formation of the carton, but the product is also restrained from movement along the length of the carton by 35 the locating recesses 24.

Transverse lines of weakening 26, in the form of partial indentations or perforations in the surface of the blank 10, extend across the blank 10 between the side edges 21 and 22. The lines 26 are spaced apart from each other 5 along the length of the blank, so as to define, upon erection of the blank, a respective pocket 27 for receiving a single product container therein.

Pairs of opposed cut-outs 27 are formed in the blank 10 at positions which are spaced-apart along the lengths of 10 the third and fourth fold lines 15 and 16 and which are located such that each pair of cut-outs 27 is intersected by a respective one of the weakening lines 26. The arrangement is such that a loaded carton sleeve, as shown in Figure 3, can be broken-open along a selected one of the 15 lines of weakening 26 and in a generally pivoted motion about an axis extending through the respective pair of cut-outs 27. The combination of the lines of weakening, plus the cut-outs 27, enable the carton sleeve readily to be broken-open, whereby a selected individual product container can 20 readily be made available, but leaving the remaining portion of the carton and the product contained therein securely housed in position for storage, and subsequent use.

Accordingly, the embodiment shown in Figures 1 to 3 25 provides a carton-forming blank which can be erected into a carton sleeve which has, inter alia, two advantages over existing constructions. The first advantage is that the products are securely held captive within the sleeve, against dislodgement, by virtue of the engagement of the 30 product containers in the locating recesses 24. The second advantage is the break-open feature, provided by means of the lines of weakening 26 and the cut-outs 27. It is within the scope of the invention for embodiments of carton-forming blank to be provided, having one or both of 35 these features.

Referring now to Figures 4 to 8, this shows a second embodiment of carton-forming blank which is designated generally by reference 40. Parts corresponding with the first embodiment are designated by the same reference numerals, and will not be described in detail again. The blank 40 is capable of being erected and closed around, as a sleeve, two layers of product containers. In order to separate the two layers, a divider plate 41 is provided, as shown in Figure 5, which is assembled with the blank, as shown in Figure 7. The divider plate 41 helps to maintain rigidity of the carton sleeve, as well as serving as a base on which the upper layer of containers is placed.

Cut-outs 42 are formed in the side panels 17 and 18, and curved projections 43 of the divider plate 41 are received and held captive by the cut-outs 42. In addition, the flanges or rims of the upper layer of product containers may be held captive by the cut-outs 42.

Figure 6 shows a product container 44 of a lower layer, whereas Figure 7 shows both product container 44 of the lower layer, plus a single one of an upper layer of product containers 45. Figures 4 to 8 show two rows of product containers housed in the carton sleeve, each row being composed of a pair of containers, but it should be understood that the blank may be extended in its size, so as to accommodate more than two product containers in each row. The embodiment of Figures 4 to 8 has the locating recess (24) feature of the first embodiment, and may also have the break-open feature (provided by transverse weakening lines 26 and cut-outs 27), though this is not shown in these figures.

If a further longitudinal restraint is required for the carton sleeves, pre-formed regions (not shown) may be provided in the side walls 17 and 18, enabling the carton sleeves to be pinched-in, near their open ends, so as to form "tucks", which will resist longitudinal displacement

of the product in a direction towards the open ends.



## CLAIMS

1. A carton forming blank which is capable of being erected to permit product to be loaded therein, and then closed around the product so as to form a product-containing carton sleeve which is at least partly open at at least one of its ends to permit viewing of the product in the sleeve, in which the blank comprises:

first and second parallel fold lines which define therebetween a panel which forms a base of the sleeve upon erection of the blank, the base serving to bear the load of product loaded thereon;

third and fourth fold lines which extend parallel to each other and to the first and second fold lines, the third fold line being laterally spaced from the first fold line to define therebetween a first side panel and the fourth fold line being laterally spaced from the second fold line to define therebetween a second side panel;

first and second edge flaps defined between the third and fourth fold lines and adjacent side edges of the blank, said flaps being inwardly foldable into overlapping relation, upon erection of the first and second side panels, so as to complete the formation of the carton sleeve; and

pairs of opposed slits formed in the blank along the lengths of the first and second fold lines, each slit forming a locating recess upon erection of the corresponding side panel whereby each pair of opposed locating recesses is able to hold captive a respective flanged container to be located in the carton.

2. A blank according to Claim 1 and erected into carton-form, including a divider plate arranged within the carton to maintain rigidity thereof, the divider plate serving to separate two layers of product containers, and to serve as a base on which the upper layer of containers can be placed.

3. A carton according to Claim 2, including cut-outs formed in the first and second side panels, which form locating recesses into which parts of the upper layer of containers can extend, to provide longitudinal restraint.

4. A carton forming blank which is capable of being erected to permit product to be loaded therein, and then closed around the product so as to form a product-containing carton sleeve which is at least partly open at one end to permit viewing of the product in the sleeve, in which the blank comprises:

first and second parallel fold lines which define therebetween a panel which forms a base of the sleeve upon erection of the blank, the base serving to bear the load of product loaded thereon;

third and fourth fold lines which extend parallel to each other and to the first and second fold lines, the third fold line being laterally spaced from the first fold line to define therebetween a first side panel and the fourth fold line being laterally spaced from the second fold line to define therebetween a second side panel;

first and second edge flaps defined between the third and fourth fold lines and adjacent side edges of the blank, said flaps being inwardly foldable into overlapping relation, upon erection of the first and second side panels, so as to complete the formation of the carton sleeve;

transverse lines of weakening extending across the blank between the side edges, said lines being spaced apart from each other along the length of the blank so as to define, upon erection of the blank, a respective pocket for receiving a single product container therein; and

pairs of opposed cut-outs formed in the blank at positions which are spaced apart along the length of the third and fourth fold lines and which are located such that each pair of cut-outs is intersected by a respective one of the weakening lines, the arrangement being such that a

carton sleeve loaded with a plurality of product containers, each housed in a respective pocket, can be broken-open along a selected one of the lines of weakening and in a generally pivotal motion about an axis extending through the respective pair of cut-outs, thereby to make one individual product container available, but leaving the remaining portion of the carton and the remaining product container(s) securely housed in its pocket for storage ready for future use.

5. A blank according to Claim 4, including pairs of opposed slits formed in the blank along the lengths of the first and second fold lines, each slit forming a locating recess upon erection of the corresponding side panel, whereby each pair of locating recesses is able to hold captive a respective flanged container to be loaded in the carton.

6. A blank according to Claim 1 or 4, including the formation of pre-fold or pre-weakened selected regions of the side panels of the blanks so that, upon completion of the formation of the carton sleeve with product therein, these regions can be pinched-in, thereby forming "tucks" which restrain the product from movement towards the otherwise open ends of the sleeve.

7. A blank according to Claim 1 and substantially as hereinbefore described with reference to, and as shown in the accompanying drawings.

8. A blank according to Claim 4 and substantially as hereinbefore described with reference to, and as shown in the accompanying drawings.

**THIS PAGE BLANK (USPTO)**